REMARKS

Please reconsider the present application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Drawings

Applicant respectfully requests that the Examiner accept the drawings submitted on May 6, 2005. Applicant submits that these drawings are formal.

Disposition of Claims

Claims 1-13 were pending in the present application. By way of this reply, claims 4 and 9 have been cancelled without prejudice or disclaimer. Accordingly, claims 1-3, 5-8, and 10-13 are now pending in the present application. Claims 1, 5, and 10 are independent. The remaining claims depend, directly or indirectly, from claims 1, 5, and 10.

Claim Amendments

Independent claims 1 and 5 have been amended by way of this reply. No new matter has been added by way of these amendments, as support for these amendments may be found, for example, in the claims and in paragraphs [0019]-[0020] of the present application.

Rejection(s) under 35 U.S.C § 103

Claims 1-13 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,696,694 issued to Khouja *et al.* (hereinafter "Khouja") in view of the document titled "IC Power Distribution Challenges" by Bobba *et al.* (hereinafter "Bobba"). Claims 4 and 9 have been cancelled by way of this reply. Thus, this rejection is now moot with respect to claims 4 and 9. Independent claims 1 and 5 have been amended in this reply to clarify the

present invention recited. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

The present invention is directed to a method for data analysis of power modeling for a microprocessor. Specifically, multiple values of power data are used to summarize the data to characterize behavior related to single and multiple cycles of the microprocessor (*see* Specification, abstract).

Accordingly, independent claim 1 requires generating summary information relating to single cycle behavior of power data, which comprises calculating absolute values of a peak value and a lowest value of the power data. Independent claim 5 requires generating summary information relating to multiple cycle behavior of power data, which comprises calculating an average value of the power data across a plurality of cycles, where the power data associated with a current cycle is included with data from previous cycles in the power modeling simulation. Independent claim 10 requires generating summary information relating to a multi-cycle derivative of the power data. Further, claims 1, 5, and 10 require analyzing the power modeling simulation using the respective summary information.

Khouja, in contrast to the present invention, does not show or suggest the present invention as required by amended independent claims 1, 5, and 10 of the present application. This is evidenced by the fact that Khouja is used only to render obvious the generation of summary information. Khouja is directed to a method for computing power dissipated *by a particular cell* using information available at the gate library level (*see* Khouja, abstract). Khouja discusses power estimation caused by leakage, switching, and internal power dissipated in a design (*see* Khouja, col. 10, line 15 – col. 11, line 26).

Khouja provides no detail of what is implied by reporting summary information. Khouja merely contemplates reporting "static" and "dynamic" power for a design or instance

(*see* Khouja, col. 36, line 44 – col. 39, line 13). In the sample output beginning at col. 51 of Khouja, Khouja merely shows reporting the above discussed characteristics, such as leakage power, for a given cell. Khouja is completely silent with respect to reporting cycle-based power data. Specifically, Khouja fails to show or suggest generating summary information relating to (i) single cycle behavior of power data that comprises calculating absolute values of a peak value and a lowest value of the power data, (ii) multiple cycle behavior of power data that comprises calculating an average value of the power data across a plurality of cycles, where the power data associated with a current cycle is included with data from previous cycles in the power modeling simulation, or (iii) a multi-cycle derivative of the power data.

Bobba, as discussed above with reference to Khouja, does not show or suggest the present invention as required by amended independent claims 1, 5, and 10 of the present application. Bobba is directed to a *general overview* of techniques for estimation of supply voltage variations and high-level power estimation. In discussing power estimation, Bobba merely states that circuit-level power estimates can be obtained (*see* Bobba, section 4, first paragraph). However, Bobba provides no detail regarding such an estimate. Bobba continues by discussing power dissipated by CMOS logic gates, which can be used to estimate power dissipated by such a circuit. Again, Bobba provides no detail to such an analysis (*see* Bobba, section 4, second paragraph). At a higher level of abstraction, Bobba introduces using switched capacitance in instruction-level power estimation to estimate total power dissipation (*see* Bobba, section 4, third paragraph). Clearly, like Khouja, Bobba does not contemplate generating summary information relating to (i) single cycle behavior of power data that comprises calculating absolute values of a peak value and a lowest value of the power data, (ii) multiple cycle behavior of power data that comprises calculating an average value of the power data across a plurality of cycles, where the power data associated with a current cycle is included

with data from previous cycles in the power modeling simulation, or (iii) a multi-cycle derivative of the power data, as required by the claimed invention.

Further, he Examiner asserts that limitations of the present invention such as calculating absolute values of a peak value and a lowest value of power data are inherent to any circuit program. Applicant respectfully disagrees as such a calculation is clearly not evidenced by either of the cited prior art sources. Khouja, as discussed above, is directed to a method for power estimation caused by leakage, switching, and internal power dissipated in a design by a particular cell using information available at the gate library level. Bobba, as discussed above, is merely directed to a general overview of various techniques for estimating power dissipation. As calculating absolute values are not inherent in Khouja or Bobba, it cannot be said that such calculation is inherent to "any circuit program."

Further, Applicant notes that there is no motivation to combine the cited references. The Examiner cannot combine prior art references to render a claimed invention obvious by merely showing that all the limitations of the claimed invention can be found in the prior art references. There must be a suggestion or motivation to combine the references <u>*within the prior art references themselves*</u>. In other words, regardless of whether prior art references can be combined, there must an indication within the prior art references expressing desirability to combine the references. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990) (emphasis added). Further, the present application *cannot be used a guide* in reconstructing elements of prior art references to render the claimed invention obvious. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991) (emphasis added).

The Examiner assumes it would be obvious to one skilled in the art to combine Khouja with Bobba. However, one skilled in the art would not be motivated by Khouja, which is completely silent with respect to single-cycle or multiple-cycle behavior of power data, or

with respect to a multi-cycle derivative of power data, to incorporate the teachings of Bobba without the present application as a guide. Further, Bobba is completely silent with respect to generating summary information relating to analyzing a power simulation of a microprocessor, or with respect to single-cycle or multiple-cycle behavior of power data, or to a multi-cycle derivative of power data. Without the present application as a guide, one skilled in the art would have no motivation to combine Khouja with Bobba.

In addition to providing no motivation to generate summary information, Bobba actually teaches away from the use of Khouja. Khouja clearly states that dissipated power is calculated using information available at the gate library level (*see* Khouja, abstract). Khouja provides a gate-level simulation by estimating the probabilities and the toggle rate at all nodes in the circuit (*see* Khouja, col. 7, lines 19-29). Bobba clearly states that gate-level power estimation is not a desirable method for power estimation for a number of reasons (*e.g.*, it occurs too late in the design process, it is too expensive, etc.) (*see* Bobba, Section 4, second paragraph). Thus, there is no motivation to combine the cited references, as Bobba teaches away from the use of Khouja.

In view of the above, Khouja and Bobba, whether taken separately or in combination, (a) are not properly combinable and (b) fail to show or suggest the present invention as recited in independent claims 1, 5, and 10. Thus, independent claims 1, 5, and 10 are patentable over Khouja and Bobba. Dependent claims 2-4, 6-9, and 11-13 are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 03226/073001; P5521).

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Respectfully submitted,

By ______________________

Wasif H. Qureshi
Registration No.: 51,048
OSHA · LIANG LLP
1221 McKinney St., Suite 2800
Houston, Texas 77010
(408) 730-2650
(713) 228-8778 (Fax)
Attorney for Applicant

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